



COMPETE EGYPT

D3.1.1: QUALITY MANAGEMENT FRAMEWORK WITH RECOMMENDATIONS FOR DIGITAL SYSTEMS

DIGITAL SYSTEM CAPABILITIES





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DIGITAL SYSTEM CAPABILITIES

1. Definition of Digital Quality Management System (DQMS):

It's full automated system that includes all documents and records for important components of an organization's management system in order to provide factual and substantial references of organizational procedures, plans and activities, essential information, rules and guidelines, and keep organizational records vital to the operations of TVET institutions.

2. Purpose of the System:

DMQS aims to facilitate continuous improvement and development of operations and results to make sure that what the organization does is fit for purpose and keeps on constantly seeking ways to improve and do better than it was before. As well as defining the responsibilities and roles of all members inside the institution and measuring their performance. In addition to strengthening governance mechanisms, whether inside or outside the special relationship with external parties,

3. Application of DQMS in the Schools

Applying DQMS in schools brings numerous benefits to the education system. Firstly, it enhances the overall quality of education by providing a systematic approach for continuous improvement. Secondly, digital tools can effectively support the implementation of QMS in schools by facilitating data collection, analysis, communication, and documentation processes. For instance, learning management systems enable efficient online assessments and feedback mechanisms. Moreover, data analytics platforms provide valuable insights into student performance patterns.

4. Implementation Methodology of DQMS

To ensure effective implementation, DQMS is based on a user-friendly digital tool that aligns with their requirements and objectives. Factors such as ease-of-use, scalability, compatibility with existing systems, and support. DQMS includes five main pillars: students, the school's infrastructure, curriculum, human resources, and field/practical training that is coordinated with industrial partners and the private sector. Each main pillar is further divided into sub-pillars, which encompass crucial aspects necessary for evaluation purposes within each pillar. This will be elucidated in the subsequent explanation, accompanied by the diagram provided below:

A- **Student:** The first pillar pertains to the student and encompasses two sub-pillars: the student's performance and grades obtained in both theoretical and specialized subjects. These sub-pillars evaluate various

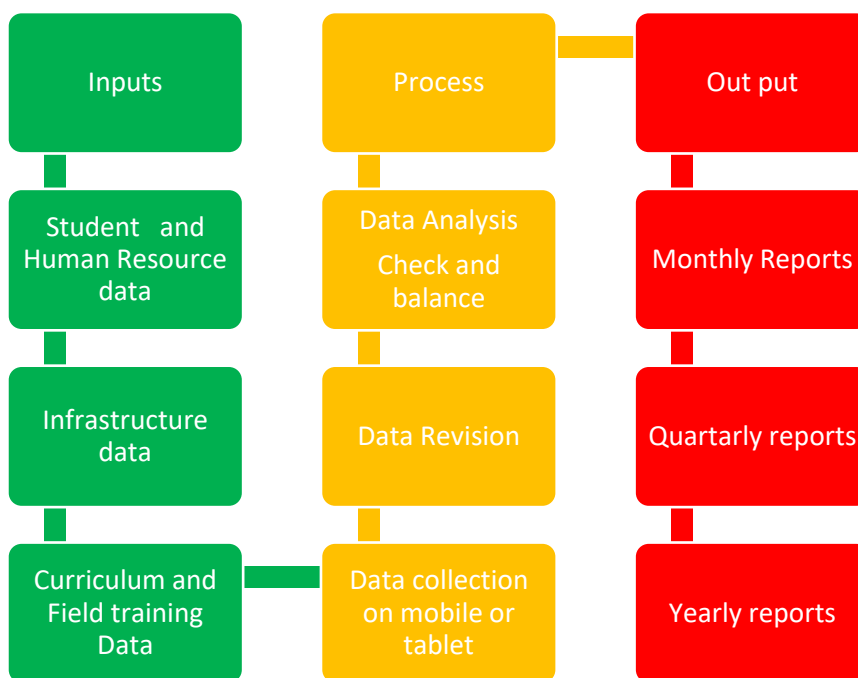


aspects such as attendance, behavior, knowledge acquired, and skills accomplished. Additionally, practical exercises completed and average grades in both theoretical and specialized subjects are taken into consideration. This pillar is assessed monthly through a set of questions that gauge the student's commitment to attending school days and practical training.

- B- **Infrastructure:** The school's infrastructure, encompassing classrooms, laboratories, computers, occupational safety and health procedures, training workshops, and other relevant aspects, constitutes the second pillar. This pillar will undergo evaluation on a semester basis, utilizing a set of questions to assess various factors. These questions will include inquiries about the proportion of classrooms equipped with educational resources, such as student chairs, smart boards, computers, display screens, and projectors.
- C- **Curriculum:** The educational curriculum is the third pillar, which comprises three sub-pillars that are associated with academic subjects, students' attendance, and acquired skills. This pillar will undergo evaluation once every semester, based on a set of questions that include the educational curricula, comprising the student guide, teacher's guide, and necessary attachments for each curriculum.
- D- **Human Resources:** The human resources pillar of the school comprises three sub-pillars: school administration, teacher performance in cultural subjects, and trainer performance in specialized subjects. The school administration's effectiveness in managing the educational process is measured by the frequency of meetings with parents, students, and teachers, the submission of periodic reports, and problem-solving abilities. The evaluation of teacher and trainer performance is based on their classroom management skills and their ability to engage students and provide them with essential information. This pillar will undergo monthly evaluation, which will include assessing the technical skills of trainers in specialized subjects during vocational training in workshops and laboratories.
- E- **Practical Training:** The evaluation of the fifth pillar, which encompasses field/practical training, is conducted twice per semester. This pillar assesses the school's capacity to offer training opportunities

in favorable industrial settings and the degree to which students derive benefits from such training. The assessment is based on various inquiries, including whether the school effectively provides suitable field training to students in accordance with the study plan.

The following diagram illustrates the flow of data and information through the stages of input, operations, and output





5. Pillars and Scope of DQMS:

Main Pillar	Sub Pillar	Scope	Implementation Periodicity	List of Questions (Example)
A- Student	A-1 Student	A-1-1 Attendance A-1-2 Behaviour A-1-3 Knowledge A-1-4 Skills	One per month	Students' commitment to attending school days and practical and practical training.
	A-2 Grades	A-2-1 Theoretical Subject. A-2-2 Practical Subject. A-2-3 Ability to join to labour market.	One per month	Average score of students in cultural subjects
B- Infrastructure	B-1 Class rooms	B-1-1 Seats, Boards, Computers, Screens, and Data show. B-1-2 Computer labs and special labs. B-1-3 Equipment, Workshops. B-1-4 Health and Safety tools	One per semester	The percentage of classrooms equipped with educational equipment (student chairs, smart boards, computers, display screens, and a projector).



Main Pillar	Sub Pillar	Scope	Implementation Periodicity	List of Questions (Example)
C- Curriculum	C-1 Subjects	C-1-1 Competences.	<ul style="list-style-type: none"> One per semester 	Educational curricula that include the student guide, the teacher's guide, and the necessary attachments for each curriculum
	C-2 Attendance	C-1-2 Knowledge.		
	C-3 Competences	C-1-3 Skills		
D- Human Resources	D-1 Administration	D-1-1 Organizational Chart.	<ul style="list-style-type: none"> One per semester 	The existence of a clear and specific organizational structure within the school
		D-1-2 Reports System.		
		D-1-3 Meetings.		
		D-1-4 Problem Solving.		
		D-1-5 Exams.		
	D-2 Teacher	D-2-1 Objectives of Subject.	<ul style="list-style-type: none"> One per month 	The teacher explains the purpose of the lesson and the most important points/topics that will be covered
		D-2-2 Preparations of Teaching or training.		
		D-2-3 Class Management.		
		D-2-4 Evaluation.		
	D-3 Trainer	D-3-1 Training objectives	<ul style="list-style-type: none"> One per month 	The technical skills of the trainer in the specialized subject during vocational training in workshops and laboratories.
		D-3-2 Class Management.		
		D-3-3 Workshop Management		



Main Pillar	Sub Pillar	Scope	Implementation Periodicity	List of Questions (Example)
		D-3-4 Evaluation.		
E- Practical / Field Training	E-1 Industry Practice	E-1-1 Attendance. E-1-2 Behaviour. E-1-3 Skills. E-1-4 Copmetences. E-1-5 Evaluation.	<ul style="list-style-type: none"> Twice per semester 	The school provides appropriate field training for students according to the study plan



6. Results Analysis and Reporting

Effective analysis and reporting are crucial for understanding the outcomes of the DQMS and communicating them to stakeholders. Data Analysis focuses on examining the data used by the system. It includes data profiling, data quality assessment, data mapping, and data transformation recommendations. The generated reports help ensure that the system operates with accurate and reliable data.

Types of reports

- Student performance report
- Subjects report
- Teacher report
- Trainer report
- Staff report
- Practical Training report
- School Managers report
- Classroom report

7. Control Components

By implementing a robust control component in **DQMS**, educational institutions can ensure that they are consistently delivering high quality education and meeting the needs of their students and stakeholders.

Documentation and reporting, the control component requires proper documentation and reporting of monitoring and evaluation results, corrective actions taken, and outcomes achieved. This documentation serves as evidence of the school's commitment to quality and provides a basis for future improvement efforts. It also ensures transparency and accountability in the school's quality management system.

Backup and archive, as part of the used technologies to the schools' staff, teachers, parents, and industrial it retains copies of the system control software for back-up and archival purposes and, as required or allowed herein, for modifications to the system.

Authentication components, the DQMS using the authentication and authorization components. Authentication services of Google and Microsoft are used for secure and convenient user authentication.

8. Organizational Structure of DQMS

The organizational structure of a Quality Management Framework encompasses various components that collectively contribute to its successful implementation within educational institutions such as schools. By applying this framework using digital tools effectively enables schools to enhance the overall quality of education by promoting continuous



improvement practices. For further research on improving quality management practices in educational institutions' context could focus on studying best practices from successful implementations across diverse settings or exploring innovative technologies that advance existing digital tools used within the framework.

9. Roles and Responsibilities for Implementing the DQMS

To ensure effective application of DQMS in schools, various stakeholders play crucial roles throughout the process. These include school administration, teaching staff members, parents, students themselves as active participants, and educational policymakers who establish guidelines for implementing DQMS at a broader level.

School administrators oversee the establishment and maintenance of an effective DQMS framework while teachers implement it within their classrooms to monitor student progress consistently. Collaboration between different stakeholders is pivotal for successful implementation; administrators need to engage teachers through professional development programs while involving parents via regular communication channels.

10. Recommendations for Effective Implementation of Digital Systems

To ensure successful implementation of digital systems for education quality management, educational institutions need to address several critical factors:

Firstly,

Infrastructure readiness is vital because robust network connectivity, hardware devices, and software applications are necessary to support these systems.

Secondly,

Adequate training and support for staff and students is crucial. Providing professional development opportunities, resources, and technical assistance helps build capacity in utilizing digital systems effectively.

Lastly,

Highlighting best practices from successful case studies or research findings can guide educational institutions in implementing digital systems. Learning from others' experiences provides valuable insights into overcoming challenges and maximizing the benefits of these technology solutions.



11. Conclusion

The application of QMS in schools, with the support of digital tools, ensures quality education. DQMS revolutionizes education quality management by offering new tools, capabilities, and opportunities for improvement. By implementing a comprehensive quality management framework that incorporates data collection, analysis, feedback, mechanisms, continuous improvement strategies, and stakeholder involvement.

Educational institutions can harness the full potential of digital systems to ensure high-quality education experiences for all stakeholders involved. As we move forward, it is imperative to continue integrating technology into education quality management processes whilst also being mindful of addressing infrastructure needs and providing appropriate training and support for all users. By doing so, we will set ourselves up for further advancements in this field and ultimately enhance the overall quality of education delivered through the use of digital systems. DQMS using the authentication and authorization components for security purposes as well. To ensure effective application of DQMS in schools, various stakeholders play crucial roles throughout the process.